Master's Thesis

Efficiency Gains or Market Timing? The Source of Wealth Gains from Management Buyouts Revisited

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Abstract

Recent studies of leveraged buyouts (LBOs) have reported that firm managers time buyouts so as to maximize profits from undervaluation or overvaluation of the target firms; the literature on management buyouts (MBOs) from the 1990s attributes the source of value enhancement to organizational change. Furthermore, since the mid-1990s there have been a variety of changes in the private equity (PE) industry, such as the junk bond crisis and the Sarbanes-Oxley Act. Taken together, there is doubt about the validity of applying findings from historic studies advocating the efficiency gains of MBOs to the recent and current MBO industry. Here, we replicate the work of Ofek (1994) to reexamine what better explains the improved performance of recent MBOs between 1995 and 2012. We find that organizational change through MBOs contributes to the enhancement of MBO performance, which is consistent with the findings of Ofek (1994). Our results support the robustness of the organizational change hypothesis, regardless of recent changes in PE industry.

JEL classification: Management buyouts, organizational change, market timing

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I. Introduction

Management buyouts (MBOs) refer to the transaction through which a company's management team acquires the business it manages. Such deals satisfy the interests of both parties: the buyer and the seller. The bidders obtain potential benefits from being owners. On the opposite side, sellers who seek to dispose of divisions or wish to retire can look for appropriate partners. Furthermore, MBOs can also contribute to the profits of stakeholders, combining the interests of management with the firm's performance.

In line with the expansion of MBOs, leveraged buyouts (LBOs) have played a pivotal role in supplying a sufficient amount of capital and vitalizing buyout deals. To be more specific, management can attempt to acquire their business with a relatively small portion of equity and a large portion of outside debt by means of LBOs. Due to growth in the number of MBOs that occur through LBO transactions, some early literature related to MBOs does not distinguish MBOs and LBOs. In accordance with the development of the LBO industry, MBOs have been viewed as one type of LBO. In this paper, we focus primarily on MBOs achieved through LBO transactions, and the terms private equity (PE) and LBO will be used interchangeably.

In the 1980s, many studies of MBOs reported that the participation of management in a buyout allows a large capital gain for stockholders and a performance improvement for buyout firms.[1] Since that time, changes in the characteristics of the LBO industry have occurred as the result of a couple of LBO booms and the economic crisis. Many studies present favorable results concerning operating performance and value creation through LBOs. Therefore, along with the development of the PE (LBOs are generally referred to as PE[2]) industry, continuous monitoring of MBOs is also required.

There are two competing hypotheses that aim to explain the operational improvements that follow MBOs. On the one hand, the organizational change hypothesis holds that the source of operational improvement is the augmentation of managerial ownership and the leverage ratio following the MBO. In other words, a high leverage ratio offers interest tax shields and prevents management from pursuing their own profits. In addition, high managerial ownership associates firm performance with the interests of management. On the other hand, the private information hypothesis maintains that operational improvement occurs regardless of the MBO, as management who have favorable private information takes part in the buyout. Therefore, management benefits from the undervaluation of the firm, which is anticipated to have positive future performance.

Ofek (1994) develops an ingenious approach to test which of the above two hypotheses is supported

[1]See S. Kaplan (1989a, 1989b), Smith (1990), Lichtenberg and Siegel (1990), and D. S. Lee (1992).

[2]See Steven N. Kaplan and Strömberg (2009).

by the large amount of LBO activities in the 1980s. He looks at a failed MBO sample and its performance. In the case of failed MBO deals, there will be no changes in ownership or leverage following the cancellation of the MBO. If the organizational change hypothesis is correct, there will be no improvement in the performance of those firms. However, if the performance of firms that experience the cancellation of an MBO improves, that outcome will support the private information hypothesis. That is, if favorable private information about the future performance of firms drives management to partake in buyout deals, even when the firms do not experience organizational changes, they will exhibit enhanced performance, regardless of whether or not the buyout is successful. Ofek reports empirical results that imply that the organizational change hypothesis is much more consistent with the data than the private information hypothesis.

A group of scholars recently investigated the value consequences of LBOs and presented some results consistent with the private information hypothesis. Weir, Laing, and Wright (2005) argue that management becomes involved in buyouts to exploit the undervaluation of firms in the market. In contrast, Ang, Hutton, and Majadillas (2014) maintain that the shareholdings of management decrease in post-LBO firms and that the managers exploit market time for better buyout pricing. Both studies claim that management utilizes information asymmetry.

Since the mid-1990s, significant changes have occurred in the PE industry. Such changes in the industry are described well by Kaplan and Strömberg (2009) and Renneboog and Simons (2005). In terms of the externality of change, while a majority of PE transactions that occurred in the 1980s occurred in mature industries, such as manufacturing and retail, in line with the downfall of the junk bond market in the 1990s, the magnitude of PE transactions decreased and the PE activity was dispersed into new industries, such as information technology, financial services, and healthcare. In addition, after the mid-1990s, the number of secondary buyout (SBO) transactions increased substantially, as did the number of public-to-private transactions in a wide range of industries. In terms of the internality of change, there have been public and political challenges to the PE industry. Renneboog and Simons (2005) enumerate anti-takeover legislation, the credit crunch, political coercion against high leverage, the junk bond crisis, and the Sarbanes-Oxley Act as the fuel for the transformation of the PE industry since the mid-1990s. Most importantly, the Sarbanes-Oxley Act increases the cost of stock listing, driving small companies to go private.

In this situation, many changes in regulations and economic circumstances could have affected how managers attained operational efficiency through MBOs in the 2000s. In other words, managers are likely to maximize their benefits by participating only in MBOs in which operating performance is expected to improve. Following the basic idea and methodology of Ofek (1994), we address whether there has been any change in the characteristics of MBOs, including the hypothesis that explains the positive operating performance that followed MBOs that occurred since the early literature in the 1990s.

In this analysis, the probability of endogeneity caused by selection bias in the sample may be high. If the cancellation of an MBO is caused by management who receives unfavorable information, the stock price will decline as a necessity. Therefore, no change in the operating performance of a failed MBO sample is inconsistent with the organizational change hypothesis. Rather, this outcome reinforces the private information hypothesis. Thus, to avoid selection bias, this article distinguishes between voluntarily ceased MBOs and compulsorily rejected MBOs when testing its hypothesis.

We first examine abnormal stock returns around the MBO announcement and withdrawal dates. We find that a significant price decline occurs near the time of cancellation. We also find no significant changes in accounting performance for those firms that experienced MBO failure. In addition, we examine the sample in which management was replaced to determine whether this management turnover sample is valid for inclusion in our sample. When we control the failed MBO sample to avoid selection bias, the results do not change, supporting the idea that the enhanced value of MBO firms is attributed to the organizational changes that occur following MBOs. Furthermore, we can see that there have been no changes in the MBO hypothesis since Ofek (1994), despite changes in the LBO industry.

The contribution of this paper is the extension of the previous literature to explain positive MBO performance. Furthermore, we use recent MBO data to examine the changes in MBO characteristics that occurred due to changes in economic circumstances and the PE industry. By investigating the performance of failed MBO firms, we find that the private information of management does not force the managers to enter buyout deals.

The remainder of this paper is organized as follows. In section II, we review the extant literature that explains the performance of MBOs and introduces the debate between the organizational change hypothesis and the private information hypothesis, which both explain the enhanced operating performance observed after MBOs. Section III describes the sample construction and data analyzing methods, and section IV reports test results concerning which hypothesis better explains the improved operating performance of MBOs in the 2000s by using the methodology of Ofek (1994). In section V, we control the impact of management turnover on the performance of unsuccessful MBOs to make our analysis robust. Section VI concludes.

II. Literature Review

Most studies of MBOs were carried out in the late 1980s and early 1990s. The development of the PE industry has expanded the types of LBOs from early MBOs to various forms of buyouts. In line with these changes in the types of LBO transactions, mainstream LBO studies have broadened from MBOs to a variety of LBO deals. From the early studies on MBOs, the literature consists of main two parts: MBO performance and the reason for the improved performance of MBOs.

Most studies of MBO performance report positive results. Of those studies, C. I. Lee, Rosenstein, Rangan, and Davidson III (1992) and D. S. Lee (1992) discover positive stock price effects after MBO deals. In addition to the abnormal stock returns of MBOs, S. Kaplan (1989a) finds positive accounting performance after MBOs completed between 1980 and 1986, and Smith (1990) presents similar results using an extended sample period. Lichtenberg and Siegel (1990) investigate the effects of MBOs that occurred from 1983 to 1986 on the productivity of plants and find that plant productivity increases in the three years following a buyout. However, the recent LBO study of Cohn, Mills, and Towery (2014), which included MBOs, reports tepid results concerning operating improvements subsequent to LBOs.

Several studies attempted to reveal the reason for wealth gains in MBOs, and two strands of hypotheses attempt to explain the improved performance observed after MBOs. One strand is the private information hypothesis, and the other strand is the organizational change hypothesis. In accordance with the private information hypothesis, Harlow and Howe (1993) examine insider trading activity prior to LBOs and MBOs. Those authors find significant abnormal net buying prior to MBOs and a positive correlation between the buyout premium and the level of abnormal net buying trades prior to the buyout announcement. This result indicates that management uses managerial information to pursue its own gains. Kaestner and Liu (1996) also examine abnormal insider trading activity from 1980 to 1989, distinguishing two types of abnormal trading activities: those motivated by the private information of management and those pursued for the alleviation of agency problems or possible tax savings. Through their examination, those authors further confirm the results of Harlow and Howe (1993).

Weir, Laing, and Wright (2005) also argue that management becomes involved in buyouts to exploit the undervaluation of firms in the market. In conjunction with the undervaluation hypothesis, there are some concerns about the deterioration of the financial market due to the participation of managers who have responsibilities to the buyers and sellers of the firm. In the same vein, management has an incentive to exploit the undervaluation of the firm value or manipulate those values to decrease the transaction price. Schadler and Karns (1990) argue for legal resolution to restrict the use of internal information to promote managers' interests and to foster efficiency in the financial market (see also Lowenstein (1985)). Bruner and Paine (1988) also suggest self-regulating solutions and the role of the government in encouraging disclosure to cope with management's conflict of interest between its fiduciary duty to shareholders and its own gains.

Several studies have examined the managerial incentive to manage earnings prior to buyouts. Li, Qian, and Zhu (2013) scrutinize earning-reducing manipulation prior to MBOs and its influence on the operating performance of post-MBOs by using the MBO sample from 1985 to 2005. Those authors find abnormally high discretionary expenses, abnormally low discretionary accruals, and losses from asset sales in the year prior to MBOs. Such findings are related to lower transaction values for acquisition

and to improved post-MBO performance. These results are an extension of Perry and Williams (1994) and Hafzalla (2009). In particular, Perry and Williams (1994) find reduced earnings due to the manipulation of discretionary accruals when analyzing 175 MBOs from 1981 to 1988. Hafzalla (2009) finds that managers who are involved in MBOs announce more negative press releases immediately before the MBO transaction in comparison to other periods, and this tendency is reinforced when compared to LBOs.

In contrast to the undervaluation hypothesis, Ang, Hutton, and Majadillas (2014) maintain that the shareholdings of management decrease in post-LBO firms and that the managers exploit market time for better buyout pricing. The aforementioned studies claim that management utilizes information asymmetry. However, the former study uses the undervaluation of firms during the pre-announcement period and the latter study takes advantage of overvaluation near the time of the announcement. Meanwhile, DeAngelo (1986) finds no evidence for systematic accounting accruals to decrease reported income after examining 64 NYSE (New York Stock Exchange) firms offering MBOs from 1973 to 1982. Her result is inconsistent with the argument that management exploits market time for its own profits.

Ofek (1994) supports the organizational change hypothesis by examining the stock and accounting performance of unsuccessful MBOs that occurred from 1974 to 1989. Further, Muscarella and Vetsuypens (1990) report direct evidence of the impacts of LBOs on firm profitability by targeting reverse LBOs. Jensen (1997) also focuses on the disciplining effects of debts as a source of profit. Cotter and Peck (2001) sustain that active monitoring by buyout specialists fosters MBO performance. S. Kaplan (1989b) highlights tax benefits as an important source of value creation.

Beyond these explanations, Jones (1992) indicates that an improved understanding of accounting systems subsequent to MBOs contributes to the efficiency and productivity of firms. In terms of management behavior, efficiency gains can be achieved via improved working conditions but not financial rewards (Green, 1992). Through the examination of large MBOs in the 1980s, Steven N. Kaplan and Stein (1993) insist that the growth of the public junk bond market boosted LBO deals in the late 1980s.

Taken together, inconsistent explanations for the profit gains of MBOs are proposed in the prior literature. Some studies highlight information asymmetry as a source of profits for MBO firms. Those studies argue that the positive performance of MBO firms results from preliminary information on future achievement. Furthermore, in terms of information asymmetry, some research reports that managers can exploit the overvaluation of their firms in the market to create profit margins by selling their holdings. In contrast, other studies indicate that the improved performance of MBO firms is achieved via organizational change through buyouts, such as changes in governance and higher leverage. Therefore, this study tests both hypotheses using the methodology of Ofek (1994) with a recent failed MBO sample.

III. Sample and Methodology

A. Sample

In the Merger and Acquisition (M&A) database of SDC Platinum, we narrow the acquisition technique to MBO. The MBO sample is composed of five categories, including “Completed,” “Pending,” “Intended,” “Status,” and “Withdrawn.” We use data for which the label is “Withdrawn” from the dataset. The number of firms that have ever participated in a buyout deal is 1,896. After removing all other status labels aside from withdrawn (completed (1,654), pending (49), unknown (68), and intended (3)), we obtain 122 observations of unsuccessful MBO deals.

Again, the failed MBO sample consists of 122 observations of 118 firms that experienced unsuccessful MBO offers from 1995 to 2012. We retrieve the list of unsuccessful MBOs from SDC Platinum, which provides specific and detailed information about MBO deals, including deal values and announcement and cancellation dates. Further, we consult LexisNexis and Securities and Exchange Commission (SEC) filings (8-K, 10-K, 10-KSB, 10-K405, 10-Q, SC-13E3, SC-13D, DEF14A, PRE 14A, and S-4 forms) to identify management replacement and the reason for cancellation and to determine whether there are classified boards in unsuccessful MBO firms.

We access the SEC filings listed above to obtain management turnover information after failed MBO deals. We first check 8-K forms near the MBO announcement for firms that report corporate changes considered to be important events for shareholders, such as changes in management composition or the cancellation of M&A. When firms do not file an 8-K report, we compare the names of management on 10-K forms before and after the cancellation date. If a firm that received a buyout offer from its management was acquired by another bidder or management following the offer, then we access the DEF 14A and 10-K forms of the acquiring firm. Such filings reveal information concerning the history of the directors and the succession of employment through M&A.

We define management replacement as one of the following three conditions. First, there is a change in at least one of the top three executives within one year subsequent to the termination of the MBO agreement. The top three executives consist of the CEO, president, and chairman of the board. Second, the management who participated in a failed deal leaves the firm in the year after the MBO agreement was withdrawn. Third, the managers who resigned to make the buyout offer were not reinstated in their positions after the deal cancellation.

We combine the MBO information from the SDC Platinum M&A database with the Center for Research in Security Prices (CRSP) and COMPUSTAT databases to obtain stock returns and financial information, such as the operating performance and accounting characteristics of the failed MBO firms. We also employ the 6-digit CUSIP in SDC Platinum to merge with CRSP, COMPUSTAT and the CCM

Table I. Sample selection procedure

We extract MBO data from SDC Platinum. The data is comprised of five categories, such as "Completed", "Pending", "Intended", "Status Unknown", and "Withdrawn". We use the data of which label is "Withdrawn" from the dataset.

Sample	Number of observation
(1) The retrieved observations which experienced management buyout offers during the years between 1995 and 2012.	1,896
(2) Drop the observations of which the status is "Unknown"	(68)
(3) Drop the observations of which the status is "Pending".	(49)
(4) Drop the observations of which the status is "Intended".	(3)
(5) The successful MBO deals during the years 1995 to 2012.	(1,654)
(6) The unsuccessful MBO deals during the years 1995 to 2012.	122

link table to seamlessly integrate the CRSP and COMPUSTAT databases. Finally, to increase the precision in the data, we also refer to a press release and a news article from LexisNexis.

Table II shows sample description. Panel A reports the distribution of unsuccessful MBO offers. Failed deals caused by the illiquidity of the credit market or bidders' low reputation in the credit market are sorted into "Inability to obtain financing." Voluntary acquisition withdrawals by management bidders are categorized into "Offer withdrawn." In the case of "No reason given," the main entity of the withdrawal agreement between a target and a bidder is unclear due to the absence of a related statement in the SEC filings. Although a mutual agreement occurs between a bidder and a target company to terminate the acquisition agreement, the failure is classified into "No reason given" if there is no statement concerning the reason for the termination. In many cases, it is difficult to use SEC filings because targets are segments or subsidiaries or because targets go private after an unsuccessful MBO. In that case, those observations are grouped into "Not available." With regard to "No reason given" and "Not available," we seek additional statements from LexisNexis to categorize those failed MBOs into a more precise reason for cancellation.

Unsuccessful MBO offers resulted primarily from higher bidding by a rival bidder (25). We cannot confirm the reason for cancellation in 23 failed MBO observations: No reason given (17) and Not available (6). As reported for other corporate events, such as LBOs, an MBO trend was also observed during the sample period. Namely, there is a considerable volume of MBO deals from the mid-1990s to the early 2000s. However, starting in 2004, the number of successful/unsuccessful MBO deals declined to some degree.

The management turnover rate over the sample period is 39 percent. This rate is somewhat lower than the 47 percent reported by Ofek (1994), who investigated an unsuccessful MBO sample in the

Table II. Sample description

Panel A shows the distribution of target firms which accept an unsuccessful MBO offer and presents turnover ratios of them. We sort the firms by the reason for cancellation and the announcement year. Furthermore, we compare the number deals between successful MBOs and unsuccessful MBOs in order to see annual trends in MBOs. Available data represents whether the sample has available accounting data between YEAR -1 and +1 based on YEAR 0 of buyout offer. The reason for cancellation is classified pursuant to firms' SEC filings. In the case of "No reason given", the main agent of withdrawal agreement is unclear between a target and a bidder due to no related statement in filings. There are the cases that SEC filings are not available because targets are segments or subsidiaries, or they go private after an unsuccessful MBO deal. In those cases, the observations are grouped into "Not available". A defensive MBO offer points out the participation of the management against an existing bid by another group to defend their business from hostile M&As. Panel B shows statistical characteristics of accounting data. Leverage is the ratio of book value of debt to the sum of book value of debt and market value of equity. Panel C presents the change in ownership of the unsuccessful MBO sample in two years after the cancellation of the offer.

Panel A. Distribution of unsuccessful MBO offers

			Management				
		Full sample	Stay	Replaced	Unknown	Turnover ratio	Available data
Total in sample		122	62	40	20	0.39	61
Remained publicly for 2 years or more		61	43	17	1	0.28	54
A defensive MBO offer		8	1	4	3	0.80	59
A non-defensive MBO offer		114	61	36	17	0.37	2
Reason for cancellation							
Acceptance of a higher bid		25	4	9	12	0.69	0
Rejection by the board		23	13	9	1	0.41	14
Inability to obtain financing		16	9	5	2	0.36	10
Uncertain economic conditions		7	5	2	0	0.29	6
Offer withdrawn		21	14	4	3	0.22	16
Rejection by the stockholders		7	4	2	1	0.33	4
No reason given		17	11	5	1	0.31	7
Not available		6	2	4	0	0.67	4
Total		122	62	40	20		61
Successful offer	Year of announcement						
140	1995	16	4	12	0	0.75	5
141	1996	11	4	4	3	0.50	1
118	1997	4	4	0	0	0.00	2
94	1998	9	6	2	1	0.25	6
110	1999	12	4	6	2	0.60	7
162	2000	17	7	6	4	0.46	10
124	2001	8	3	4	1	0.57	2
134	2002	15	8	5	2	0.38	8
130	2003	6	5	0	1	0.00	3
83	2004	5	2	1	2	0.33	2
77	2005	1	1	0	0	0.00	1
66	2006	6	4	0	2	0.00	4
64	2007	6	4	0	2	0.00	4
55	2008	4	4	0	0	0.00	4
37	2009	0	0	0	0	-	0
38	2010	1	1	0	0	0.00	1
33	2011	0	0	0	0	-	0
48	2012	1	1	0	0	0.00	1
1,654	Total	122	62	40	20		61

Table II_*Continued*

Panel B. Characteristics of the sample					
	Obs.	Mean	Median	Max	Min
Leverage year -1	89	0.404	0.410	0.927	0
Leverage year 1	59	0.483	0.556	0.973	0
EBITDA/Sales -1	90	-10.641	0.108	0.585	-964.462
EBITDA/Assets -1	91	0.086	0.109	0.330	-1.216
Total sales year -1 (million $)	91	467	175	5176	0
Equity value year -1 (million $)	91	358	69	7166	1
Bid by management team (million $)	110	379	63	8,638	0.28
Months elapsed from offer to cancellation	122	4.62	3.77	32	0.23

Panel C. Ownership changes of the sample		
Status in two years after the cancellation	Number of observations	Frequency in the sample (%)
Remained publicly traded	61	50.00
Had a successful MBO	12	9.84
Was taken over by another bidder	44	36.07
Liquidated	4	3.28
Not available	1	0.82
Total	122	100.00

1980s. Nonetheless, this rate is still higher than the turnover rate for 269 randomly selected public firms that was reported by Warner, Watts, and Wruck (1988). When MBO offers are canceled due to higher bid offers, the turnover rate (0.69) is highest. However, 12 of 25 observations in the sub-sample are not associated with the calculation of the management turnover rate because many cases go private after accepting higher bid prices and do not report filings. Basically, it is difficult to define annual trends in the management turnover rate due to an insufficient annual sample of unsuccessful MBOs.

Panel B of Table II presents the accounting characteristics of the sample. The mean leverage of YEAR -1 (+1) is 0.4041 (0.4832). The increase in the leverage ratio is 0.0791 between YEAR -1 and +1, and this value is significantly lower than the 0.47 reported by Ofek (1994) for the failed MBO sample from the 1980s. While calculating the distribution of accounting characteristics, we exclude those samples that are subsidiaries or units that management attempted to acquire because it is difficult to obtain accounting information concerning individual units or subsidiaries from the financial reports of their parent firms. We obtain the deal value from SDC Platinum or use an estimated value from the SEC filings of the target firms.

Panel C of Table II shows the ownership changes for the sample in the two years following the withdrawal of the MBO offer. Sixty-one observations remained publicly traded. However, 44 firms were taken over by another bidder. Although target firms are not acquired by management, they are exposed to a high possibility of acquisition. “Liquidated” consists of the firms or segments that close down due to low performance and that divest assets or equipment by filing chapter 7. On the other hand, firms acquired after chapter 11 are classified into “Was taken over by another bidder.”

In summary, the number of MBO deals has decreased since the mid-2000s, but these deals still account for a substantial portion of LBO transactions. In addition, although unsuccessful MBO firms experience increased management replacement to some extent, it appears that the characteristics of management replacement are impervious to MBO cancellation through the mid-2000s. Finally, there are a variety of factors that explain buyout cancellation.

B. Methodology

To examine abnormal stock returns near the MBO announcement and withdrawal dates, we use the Eventus software that is offered by Cowan Research LC. As the default settings in Eventus, we use the returns that include dividends of the equally weighted indexes and compute market model abnormal returns. Next, we select a Patell two-tailed test as the statistical significance test. Additionally, we set several options for the event study. For daily abnormal returns, we subtract 46 trading days from the event date, set the estimation length to 255 days, and drop observations that have unavailable or missing returns during the estimation period. There is no consensus regarding the length of the estimation period in the M&A literature. It is typical to choose an estimation period of between 200 and 300 days 30 or 50 days prior to the event window.[3]

Concerning long-term stock performance, Barber and Lyon (1997) argue that cumulative abnormal returns (CARs) generate positively biased test statistics, whereas buy-and-hold abnormal returns (BHARs) generate negatively biased test statistics. Meanwhile, Mitchell and Stafford (2000) strongly recommend a monthly calendar-time portfolio approach due to the following advantages. First, the calendar-time portfolio approach is relatively free from statistical problems. Second, this approach can generate estimates similar to those obtained using the modified BHAR approach after taking positive cross-sectional dependency into account. Finally, those authors find a greater ability to identify abnormal performance in their samples, such as mergers, seasoned equity offerings (SEOs), and share repurchases, between 1958 and 1993. In this respect, we estimate the long-term aspect of MBO cancellation by applying calendar-time abnormal return (CTAR).

Regarding long-term stock performance, we form value-weighted portfolios of the sample, and excess returns are regressed based on the Fama and French (1993) factors, according to the following equation (1):

$$R_{p,t} - R_{f,t} = a_p + b_p\left(R_{m,t} - R_{f,t}\right) + S_p SMB_t + h_p \mathrm{HML}_t + e_{p,t} \quad (1)$$

[3]Moeller, Schlingemann, and Stulz (2005) and Graham et al. (2002) use estimation periods of (-205, -6) and (-200, -51), respectively, based on an event date of 0. In addition, various event windows are used in the M&A literature (Jensen and Ruback (1983)).

$(R_{m,t} - R_{f,t})$: Market excess return

SMB: The difference between the portfolios of small and large stocks

HML: The difference between the portfolios of high BE/ME and low BE/ME stocks

In the sample, we remove observations for which the minimum months of returns are less than 5. The intercept term indicates the average monthly abnormal return.

To comprehend the fundamental difference caused by management turnover in the sample, we seek to identify the determinants of management turnover in the failed MBOs by using logit regression. Furthermore, we compare accounting performance between the management-changed subsample and the management-unchanged subsample by using propensity score matching and difference analysis.

We use some indicator variables to describe governance characteristics. First, *Cboard* is an indicator variable used to visualize the entrenchment behavior of management. If a statement of classified boards is available in proxy statements or annual reports, the variable is equal to one. Second, we use the age indicators *AVERAGE_AGE*, *CEO_AGE*, *CHAIRMAN_AGE*, and *PRESIDENT_AGE* to control for the voluntary retirement of executives, as described in the available literature[4]. If the age of each executive is greater than 63 years, the variable is equal to one. *AVERAGE_AGE* indicates whether the average age of the managers is greater than 63 years. Third, we use the ownership indicators *AVERAGE_OWNERSHIP*, *CEO_OWNERSHIP*, *CHAIRMAN_OWNERSHIP*, and *PRESIDENT_OWNERSHIP* to control for the resistance of management to forced discharge, following Jenter and Kanaan (2015). If each executive owns more than 5 percent of the firm's equity, the indicator variables are equal to one. *AVERAGE_OWNERSHIP* indicates whether the average ownership of all of the managers is greater than 5 percent.

Ⅳ. Reasons for Improved Operating Performance

A. Characteristics of Abnormal Stock Return

Table III presents abnormal returns around 1) the MBO announcement, 2) the MBO cancellation, and 3) the interim period between the announcement and the cancellation. In panel A, the CAR around the offer announcement for the full sample is 19.17 percent, and the CAR around the cancellation is -7.65 percent. Although there is no significant change in the CAR between the offer and the cancellation, a

[4]Bizjak, Lemmon, and Naveen (2008) use an indicator variable that is equal to one if the age of the CEO is between 64 and 66 years. Similarly, Jenter and Kanaan (2015) use an indicator variable that is equal to one if the CEO's age is between 63 and 66 years.

Table III. Abnormal returns around the event days

In Table III, we measure cumulative average abnormal returns around the announcement and cancellation date and between those dates. The full sample is distinguished between a group that received another bid and the other one which did not receive it after MBO announcement, in order to control the possibility that abnormal returns are different depending on the probability of successful bid. The number of observations is in square brackets and observations must not have any missing day of return during the estimation period, 255 days subtracting 46 days before the event date. ***, **, and * indicate significance at the 1%, 5%, and 10% level respectively.

Panel A. Cumulative average abnormal returns			
Group / Event time	Offer days -5 to 1 (%)	From offer +2 to cancellation -6 (%)	Cancellation days -5 to 1 (%)
Full sample	19.17*** (0.000) [82]	-0.92 (0.859) [80]	-7.65*** (0.000) [79]
Group that received another bid	23.97*** (0.000) [19]	17.17** (0.016) [18]	5.31** (0.033) [17]
Group that did not receive another bid	17.72*** (0.000) [63]	-6.17 (0.363) [62]	-11.20*** (0.000) [62]
Panel B. Cumulative average abnormal returns			
Group / Event time	Offer days -2 to 2 (%)	From offer +3 to cancellation -3 (%)	Cancellation days -2 to 2 (%)
Full sample	19.31*** (0.000) [82]	-1.77 (0.983) [81]	-7.58*** (0.000) [79]
Group that received another bid	24.58*** (0.000) [19]	15.64** (0.026) [19]	5.19** (0.013) [17]
Group that did not receive another bid	17.72*** (0.000) [63]	-7.11 (0.276) [62]	-11.08*** (0.000) [62]
Panel C. Cumulative average abnormal returns			
Group / Event time	Offer days -1 to 1 (%)	From offer +2 to cancellation -2 (%)	Cancellation days -1 to 1 (%)
Full sample	19.32*** (0.000) [82]	-1.52 (0.909) [82]	-7.18*** (0.000) [79]
Group that received another bid	24.44*** (0.000) [19]	17.11** (0.014) [19]	4.54*** (0.005) [17]
Group that did not receive another bid	17.77*** (0.000) [63]	-7.13 (0.313) [63]	-10.40*** (0.000) [62]

significant negative change around the cancellation day cancels out positive returns around the offer day. The result appears to be consistent with the organizational change hypothesis, in that failed MBO

deals do not make positive abnormal returns without organizational changes. In addition, there is no significant decline in abnormal returns during the interim period, making it unlikely that the reason for cancellation is the arrival of negative information between the announcement and the cancellation.

The characteristics of returns would differ contingent upon the probability of success of the buyout after the announcement. To identify the different characteristics of returns depending on the probability of success in a buyout deal, we divide the sample into two groups. The first group consists of the sample that received another bid between the offer announcement and the cancellation. In contrast, the second group represents the sample that did not receive another bid during the same period. The former group has a higher probability of success in a bid than the latter group.

Firms that receive another bid have positive average abnormal returns, regardless of the period. That is, in spite of the cancellation day, the CAR is 5.31 percent. Meanwhile, the group that did not receive another bid exhibits a significant decrease in abnormal returns at the time of the cancellation, decreasing the positive return at the time of the offer announcement. For the robustness of the results concerning abnormal returns, we calculate CARs by changing the event periods in Panels B and C of Table III, but the results are consistent with the previous finding.

As shown in Table III, abnormal returns are likely to be determined by the future probability of a successful acquisition. Namely, if the probability of a successful future buyout is high, the abnormal return would tend to be high as well. Thus, we determine the abnormal returns for the firms that are not acquired by other bidders in the two years following the cancellation of the MBO in Table IV. Overall, the results are similar to those presented in Table III. As expected, at the time of the offer announcement and cancellation, the average CARs are 17.70 percent and -8.60 percent, respectively.

Management might decide to terminate the offer due to the acquisition of negative information during the interim period between the announcement and the withdrawal. Taking into account such a possibility, we subdivide the sample into two groups in Table IV. In the rejected offer group, the withdrawal from the buyout agreement results from rejection by the shareholders or the board of directors. The terminated offer group represents all observations except those in the rejected offer group. The rejected offer group excludes cancellations by management who obtains negative information about the firm. When we subdivide the sample into two group, the results do not change. In Panel A, the terminated offer and rejected offer groups show average CARs of 17.02 and 19.55, respectively, at the time of the announcement. At the time of cancellation, the terminated offer and rejected offer groups present average CARs of -8.69 and -8.32, respectively, and those values are very similar to each other.

In the long-term perspective, when calculating CTAR using monthly returns, no significant abnormal returns occurred during the period from 1 month prior to the announcement to +12 and +24 month after the cancellation for firms that were publicly traded in the two years subsequent to the failure of the MBO deal. In addition, the rejected offer group and the terminated offer group also have insignificant

Table IV. Abnormal returns when no following successful bid is made

In Panel A, we measure cumulative average abnormal returns around the announcement and cancellation date and between those dates. The all firms are not acquired by other firms or management in two years subsequent to the cancellation of MBO. The firms are divided into a group of terminated offer and a group of rejected offer according to whether the management decided to terminate the deal by themselves or not. The terminated group consists of the failed MBO sample because of the following reasons: acceptance of a higher bid, offer withdrawn, uncertain economic conditions, inability to obtain financing, and no reason given/not available. The rejected group consists of the failed MBO sample because of the following reasons: rejection by the board and rejection by the stockholders. In Panel B, average monthly abnormal returns by calendar-time portfolio with Fama-French factors are calculated. The number of observations is in square brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% level respectively.

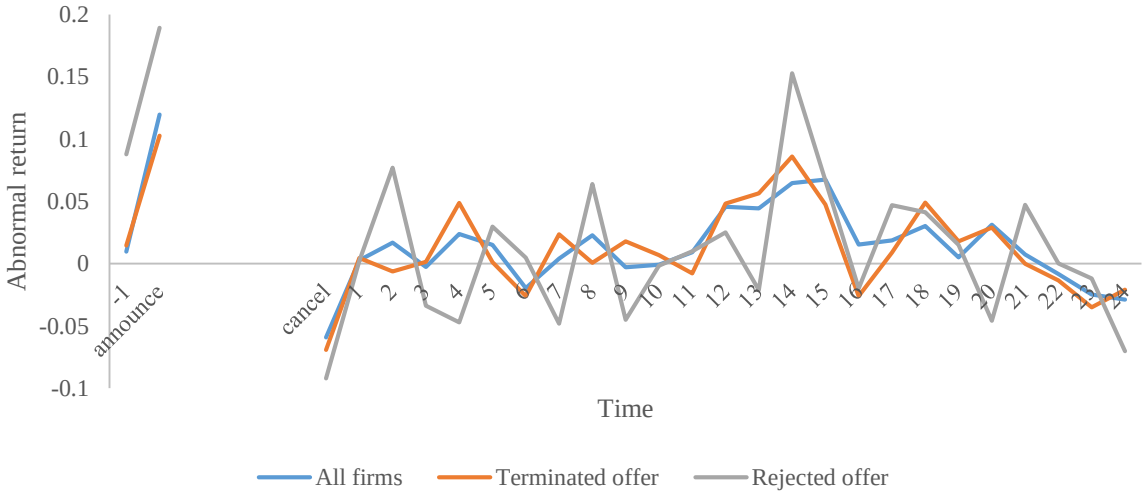
Period	All firms	Group of terminated offer	Group of rejected offer
A. Short-term cumulative abnormal returns			
Announcement (%) : offer days -5 to 1	17.70*** (0.000) [45]	17.02*** (0.000) [33]	19.55*** (0.002) [12]
Between period (%) : from offer +2 to cancellation -6	-3.31 (0.541) [43]	-4.42 (0.340) [31]	-7.88 (0.603) [12]
Cancellation (%) : cancellation days -5 to 1	-8.60*** (0.000) [48]	-8.69*** (0.000) [36]	-8.32*** (0.000) [12]
B. Average monthly abnormal returns by calendar-time portfolio approach with Fama-French factors			
From announcement -1 month to cancellation +12 month (%)	-0.002 (0.763) [48]	-0.002 (0.800) [36]	0.007 (0.430) [12]
From announcement -1 month to cancellation +24 month (%)	-0.001 (0.908) [48]	-0.002 (0.773) [36]	0.016 (0.154) [12]

average monthly abnormal returns, indicating that no long-term improvement in stock performance occurred subsequent to MBO cancellation.

To help understand long-term stock performance, Figure I charts the average monthly abnormal returns of the three groups in Table IV, which are calculated using calendar time portfolio regression. Because the observations have different MBO announcement and cancellation dates, the time intervals of the interim periods, which spans announcement to cancellation, would also differ. Thus, we plot the abnormal returns of the overlapping period: -1 month to the announcement date and the cancellation date to +24 months. Across both overlapping periods, the rejected offer group has minimum and maximum returns. That is, the variation of the monthly abnormal returns of the rejected offer group is much greater than that of the terminated group.

Figure I. Average monthly abnormal returns

Figure I charts the average monthly abnormal returns of three groups in Table IV which are calculated by calendar time portfolio regression. Charting period is -1 month to announcement date and cancellation date to +24 months.



B. Changes in Operating Performance

In this section, the operating performance of the firms that experienced an unsuccessful MBO offer is examined. Percent change in operating income is defined as the percent change in earnings before interest, taxes, depreciation, and amortization (EBITDA). Change in ROA indicates the change in EBITDA/total assets. Finally, Change in ROS refers to the change in EBITDA/sales. To control for industry effects, we present industry-adjusted change, which is defined as the difference between a certain accounting variable in the sample and the median change in the corresponding variable among all firms in the same industry as the sample. If a firm has the same four-digit SIC code as the buyout sample, the firm is considered to be in the same industry. Furthermore, if the total assets are less than $5 million at the end of YEAR -1, the firms are excluded from calculations of the median change in the industry to avoid the distortion of median values by firms that are too small.

Panel A in Table V presents the percent change in EBITDA. There is no positive change in operating income after the buyout is announced. The industry-adjusted changes in EBITDA from YEAR -1 to YEAR +2 and +3 are significantly negative. Panel B in Table V shows the percent change in sales. The median absolute change in sales from YEAR -1 to YEAR +3 is 22 percent. However, when industry trends are controlled, along with the change in operating income, there is no positive industry-adjusted change in sales; instead, there are significant negative industry-adjusted changes in sales from YEAR -1 to YEAR +1 and +2. Panels C and D present the changes in ROA and ROS. There is no significant change in the industry-adjusted median change.

Table V. Performance changes of all firms with available data

Table V shows the change in accounting performance of failed MBOs. Panel A and B show the median values of percentage change in operating income and sales. Panel C and D present absolute change in ROA and in ROS. ***, **, and * indicate significance at the 1%, 5%, and 10% level respectively. *P*-values of a Wilcoxon signed rank test are in parentheses.

Performance measures	Changes from years				
	-3 to -1	-2 to -1	-1 to 1	-1 to 2	-1 to 3
Panel A. Change in operating income: EBITDA					
Observations	[87]	[90]	[59]	[55]	[48]
Median absolute change	0.203**	0.013	-0.100	-0.177	-0.219
	(0.020)	(0.248)	(0.473)	(0.265)	(0.259)
Industry-adjusted median change	-0.012	-0.014	-0.016	-0.306**	-0.316*
	(0.902)	(0.933)	(0.448)	(0.028)	(0.050)
Panel B. Change in sales					
Observations	[86]	[89]	[58]	[54]	[48]
Median absolute change	0.185***	0.059***	0.012	0.096	0.219**
	(0.000)	(0.000)	(0.503)	(0.237)	(0.017)
Industry-adjusted median change	-0.043	-0.007	-0.129***	-0.085*	-0.016
	(0.749)	(0.329)	(0.003)	(0.075)	(0.491)
Panel C. Change in ROA: EBITDA/ Assets					
Observations	[86]	[90]	[59]	[55]	[48]
Median absolute change	0.005	-0.001	-0.008	-0.004	0.029
	(0.961)	(0.903)	(0.433)	(0.921)	(0.139)
Industry-adjusted median change	0.004	0.000	0.000	-0.009	0.029
	(0.967)	(0.919)	(0.809)	(0.993)	(0.147)
Panel D. Change in ROS: EBITDA/Sales					
Observations	[86]	[89]	[58]	[53]	[48]
Median absolute change	-0.001	-0.001	0.003	-0.005	0.003
	(0.474)	(0.577)	(0.973)	(0.724)	(0.442)
Industry-adjusted median change	0.000	0.000	0.000	-0.006	0.004
	(0.561)	(0.655)	(0.614)	(0.757)	(0.351)

Overall, there are no noteworthy performance changes for all of the firms with unsuccessful offers. This finding supports the organizational change hypothesis. However, the sample presented in Table V is susceptible to selection bias because management who procures unfavorable future information about the firm can withdraw from the transaction. Thus, MBOs that are voluntarily canceled by management are likely to accompany low operating performance. Thus, to control for selection bias, we must use another sample that includes only the MBOs in which the cancellation of the MBO occurs regardless of management's intention. To achieve this goal, we narrow our sample to failed MBOs caused by 1) the acceptance of another bid or 2) rejection by the board or shareholders.

Again, using the unwillingly canceled sample, we analyze changes in the accounting performance of the subsample. The test results for the subsample are reported in Table VI. The results are similar to those presented in Table V and even somewhat more robust than those presented in Table V. Panels A

Table VI. Performance changes of firms that experience unwillingly canceled MBOs

Table VI presents the change in accounting performance of failed MBOs in which the cancellation occurs regardless of management's intention. Panel A and B show the median values of percentage change in operating income and sales. Panel C and D present absolute change in ROA and in ROS. ***, **, and * indicate significance at the 1%, 5%, and 10% level respectively. *P*-values of a Wilcoxon signed rank test are in parentheses.

Performance measures	Changes from years				
	-3 to -1	-2 to -1	-1 to 1	-1 to 2	-1 to 3
Panel A. Change in operating income: EBITDA					
Observations	[42]	[43]	[19]	[18]	[14]
Median absolute change	0.246**	0.002	-0.226*	-0.306	-0.085
	(0.022)	(0.934)	(0.087)	(0.304)	(0.583)
Industry-adjusted median change	0.029	-0.045	-0.091	-0.342**	-0.186
	(0.534)	(0.345)	(0.130)	(0.039)	(0.173)
Panel B. Change in sales					
Observations	[42]	[43]	[19]	[18]	[14]
Median absolute change	0.185***	0.045**	-0.063	-0.052	0.064
	(0.000)	(0.030)	(0.953)	(0.966)	(0.626)
Industry-adjusted median change	-0.072	-0.013	-0.181***	-0.244*	-0.321*
	(0.579)	(0.288)	(0.008)	(0.067)	(0.068)
Panel C. Change in ROA: EBITDA/ Assets					
Observations	[42]	[43]	[19]	[18]	[14]
Median absolute change	0.017	0.004	-0.008	-0.009	-0.001
	(0.279)	(0.568)	(0.353)	(0.832)	(0.903)
Industry-adjusted median change	0.012	0.000	-0.002	-0.004	0.007
	(0.487)	(0.968)	(0.418)	(0.865)	(1.000)
Panel D. Change in ROS: EBITDA/Sales					
Observations	[42]	[43]	[19]	[18]	[14]
Median absolute change	-0.000	0.002	-0.017	-0.002	-0.013
	(0.995)	(0.849)	(0.515)	(0.832)	(0.670)
Industry-adjusted median change	-0.000	-0.004	-0.007	-0.016	-0.020
	(0.958)	(0.315)	(0.579)	(0.580)	(0.583)

and B present the changes in operating income and sales. In general, the median absolute changes in performance measures are negative. The industry-adjusted median changes of both measures following the announcement of MBOs are also negative. In particular, in the case of sales, those values are significant at the 1 and 10 percent levels. Panels C and D show the changes in ROA and ROS. Those changes are negative but not significant.

Arguably, when we test the subsample of unwillingly canceled MBOs, we do not find any evidence of progress in operating performance subsequent to unsuccessful MBO offers. Because we exclude those observations that have a probability of cancellation due to receiving unfavorable information, these results are less prone to selection bias and advocate the organizational change hypothesis.

V. Management Turnover and Sample Selection Bias

In the previous sections, our sample did not distinguish unsuccessful MBOs that changed their management from the original sample. Because management change in the sample might influence performance, we must inspect the impact of management change. As a first step, Tables VII and VIII attempt to identify the determinants of management turnover in unsuccessful MBOs.

Table VII presents the results of univariate logit regression between management turnover and (1) governance, (2) performance, and (3) macroeconomic variables. In Panel A, the dependent variable equals one if at least one of the top three executives changes or does not resume work within one year following the MBO cancellation. The other dependent variables in Panels B to D are CEO turnover, chairman turnover, and president turnover, respectively.

The independent variables in Tables VII and VIII are as follows. *Cboard* is an indicator variable that equals one if a statement of classified boards is available in proxy statements or annual reports. *CEO_AGE*, *CHAIRMAN_AGE*, and *PRESIDENT_AGE* equal one if the age of each executive is greater than 63 years. *AVERAGE_AGE* equals one if the average age of the entire management team is greater than 63 years. *Age* dummies control for the voluntary retirement of executives. A*VERAGE _OWNERSHIP*, *CEO_OWNERSHIP*, *CHAIRMAN_OWNERSHIP*, and *PRESIDENT_OWNERSHIP* also control for the resistance of management to forced dismissal. If each of the executives owns more than 5 percent of the firm's equity, the indicator variables are equal to one. *AVERAGE_ OWNERSHIP* is equal to one if the average ownership of the entire management team is greater than 5 percent. To compute market excess returns, we first set a return period and sieve out those observations for which the available return days are less than 100 days. Regarding the return days, we subtract 60 calendar days from the MBO announcement and set the estimation length to 1 year. Next, from the individual returns of the sample firms, we deduct market returns. Leverage is the book value of debt to the market value of total assets. Tobin's Q is the ratio of a firm's total market value to its book value. We calculate the LIBOR return, applying the same return period used for the market excess return.

In the results of univariate logit regression, we find a negative association between ownership indicators and management turnover. This finding is consistent with managerial intuition, in that managers who have greater ownership can exert their influence to hinder expulsion from their company. However, in contrast to the ownership dummy, the Cboard indicator is positively associated with management turnover. When we consider the fact that the Cboard provision is a proxy for the entrenchment behavior of board members, including management, this finding is somewhat inconsistent with managerial intuition. We have two possible explanations for this result. First, there could be a possibility of voluntary retirement following the cancellation of MBOs. Second, the board members

Table VII. Univariate analysis

Table VII presents the relation between management turnover and governance, performance, and macroeconomic variables. In Panel A, the dependent variable equals one if at least one of top three executives changes or does not resume within one year following MBO cancellation. Other dependent variables in Panel B to D are CEO turnover, chairman turnover, and president turnover, respectively. Cboard is one if there is a statement of classified boards in proxy statements or annual reports of firms. AVERAGE_AGE, CEO_AGE, CHIRMAN_AGE, and PRESIDENT_AGE equal one if each executive is older than 63 years old. AVERAGE_AGE means the average age of all the management. We use industry adjusted ROA (EBITDA/Assets), ROS (EBITDA/Sales), and Sales. The industry-adjusted performance measures are the difference between the performance of sample firms and mean performance of all the firms which are in the same industry with the sample. Market excess return is the sample return deducting market return for the [-425, -61]. Leverage is the book value of debt to the market value of total assets. Tobin's Q is the ratio of a firm's total market value to its book value. We calculate the return of LIBOR, applying the same estimation period with the Market excess return. ***, **, and * indicate significance at the 1%, 5%, and 10% level respectively.

Panel A. Management turnover as dependent variable										
Variables	Cboard	AVERAGE_AGE	AVERAGE _OWNERSHIP	Industry -adjusted sale	Industry -adjusted ROA	Industry -adjusted ROS	Market excess return	Leverage	Tobin's Q	LIBOR
Coefficient	1.242**	-1.460	-1.322**	0.386*	-0.285	-0.062	0.446	0.279	-0.026	0.377*
p-value	(0.513)	(1.085)	(0.670)	(0.208)	(0.334)	(0.079)	(0.375)	(0.894)	(0.461)	(0.202)
Observations	79	78	77	74	76	74	77	75	76	77
Pseudo R-squared	0.062	0.026	0.042	0.042	0.009	0.007	0.020	0.001	3.39e-05	0.046
Panel B. CEO turnover as dependent variable										
Variables	Cboard	CEO_AGE	CEO _OWNERSHIP	Industry -adjusted sale	Industry-adjusted ROA	Industry -adjusted ROS	Market excess return	Leverage	Tobin's Q	LIBOR
Coefficient	0.904*	-0.222	-1.072**	0.291	-0.184	-0.048	-0.074	-0.594	-0.232	0.299
p-value	(0.532)	(0.713)	(0.533)	(0.210)	(0.332)	(0.082)	(0.348)	(0.984)	(0.508)	(0.202)
Observations	79	77	80	74	76	74	77	75	76	77
Pseudo R-squared	0.032	0.001	0.044	0.025	0.004	0.004	0.001	0.004	0.002	0.029
Panel C. Chairman turnover as dependent variable										
Variables	Cboard	CHAIRMAN_AGE	CHAIRMAN _OWNERSHIP	Industry -adjusted sale	Industry -adjusted ROA	Industry -adjusted ROS	Market excess return	Leverage	Tobin's Q	LIBOR
Coefficient	0.452	-1.023	-1.299**	0.051	-0.086	-0.100	-0.031	-0.879	-0.303	0.180
p-value	(0.602)	(0.813)	(0.629)	(0.214)	(0.355)	(0.109)	(0.375)	(1.154)	(0.595)	(0.209)
Observations	79	74	80	74	76	74	77	75	76	77
Pseudo R-squared	0.008	0.026	0.053	0.001	0.001	0.014	9.10e-05	0.008	0.004	0.011
Panel D. President turnover as dependent variable										
Variables	Cboard	PRESIDENT_AGE	PRESIDENT _OWNERSHIP	Industry -adjusted sale	Industry -adjusted ROA	Industry -adjusted ROS	Market excess return	Leverage	Tobin's Q	LIBOR
Coefficient	1.361***	-0.139	-1.186**	0.385*	-0.252	-0.050	0.437	0.378	-0.119	0.375*
p-value	(0.522)	(0.862)	(0.527)	(0.211)	(0.331)	(0.078)	(0.367)	(0.902)	(0.474)	(0.205)
Observations	79	73	78	74	76	74	77	75	76	77
Pseudo R-squared	0.073	0.000	0.056	0.042	0.007	0.005	0.020	0.002	0.001	0.044

might expel management who exploits private information to take over their company following the failed transaction.

In Table VIII, we further analyze the factors that might affect management replacement in failed MBO firms, integrating individual explanatory variables into one logit model. This analysis allows us to see how combined independent variables affect management turnover. This approach could also be useful for identifying differences from the univariate analysis. In Table VIII, the dependent variables are the same as those presented in Table VII. To control for the industry effect of accounting variables, Panel A uses the Fama-French 12 classification and Panel B uses SIC 4-digit codes. Although we use different industry classifications for industry-adjustment values, the results presented in Panels A and B of Table VIII are similar to each other.

Based on Table VIII, there is also a positive association with *Cboard* and management turnover. This result is consistent with the univariate analysis. When considering the argument that staggered boards defend their independence against hostile M&As (Bebchuk, Cohen, and Ferrell (2009)), the significantly positive coefficient of *Cboard* reflects the conflict between the other board members and the management who participated in a buyout deal. Furthermore, we cannot rule out the possibility that management experiences a penalty for using private information during the MBO transaction.

We find that *LIBOR* has negative coefficients on management turnover. Because *LIBOR* reflects market liquidity, it is reasonable that a low *LIBOR* allows for low financing costs and encourages management to participate in a buyout, aggravating the conflict between management and board members.

In Panel A, CEO age is positively related to CEO turnover. This effect could be derived from the voluntary retirement of CEOs. In addition, the negative coefficient of *CEO_OWNERSHIP* reveals that if CEOs in unsuccessful MBO firms have significant ownership, they resist forced removal from their companies. In the second and third columns of Panel B, firm leverage is negatively associated with the change of a CEO and a chairman. The use of a large amount of debt offers tax benefits (S. Kaplan (1989b)) and forces the managers to efficiently use the free cash flow (Steven N. Kaplan and Strömberg (2009)) to make interest and principal payments. For these reasons, leverage reduces agency costs and has a negative association with CEO and chairman turnover. In addition, firm sales and chairman ownership are also negatively related to chairman turnover.

In summary, favorable capital market conditions encourage management to participate in MBOs that involve a higher probability of management turnover. The existence of classified boards solidifies the entrenchment behavior of board members and dislodges management who threatens their status after MBO cancellation.

In Table IX, we compare the accounting variables of two subsamples to explore the influence of management change on accounting performance. The first subsample includes the failed MBOs that

Table VIII. Determinants of management turnover

Table VII present the determinant of management turnover following the cancellation of MBOs. The dependent variable is one if failed MBO firms replace one of their executives. *Cboard* is one if there is a statement of classified boards in proxy statements or annual reports of firms. *AVERAGE_AGE*, *CEO_AGE*, *CHIRMAN_AGE*, and *PRESIDENT_AGE* equal one if each executive is older than 63 years old. *AVERAGE_AGE* means the average age of all the management. If each executive owns more than 5 percent of their firm's equity, the indicator variables are equal to one. *AVERAGE_ OWNERSHIP* means whether the average ownership of all the management is greater than 5 percent. We use industry adjusted ROA (EBITDA/Assets), ROS (EBITDA/Sales), and Sales. The industry-adjusted performance measures are the difference between the performance of sample firms and mean performance of all the firms which are in the same industry with the sample. Market excess return is the sample return deducting market return for the [-425, -61]. Leverage is the book value of debt to the market value of total assets. Tobin's Q is the ratio of a firm's total market value to its book value. We calculate the return of LIBOR, applying the same estimation period with the Market excess return. ***, **, and * indicate significance at the 1%, 5%, and 10% level respectively.

Panel A. Industry adjustment by Fama-French 12 classification				
VARIABLES	(1) Management turnover	(2) CEO turnover	(3) Chairman turnover	(4) President turnover
Cboard	5.539**	2.166*	1.852	6.758**
	(0.048)	(0.069)	(0.253)	(0.030)
AVERAGE_AGE	0.840			
	(0.671)			
AVERAGE_OWNERSHIP	-3.063			
	(0.149)			
CEO_AGE		2.918*		
		(0.065)		
CEO_OWNERSHIP		-1.710*		
		(0.099)		
CHAIRMAN_AGE			0.763	
			(0.581)	
CHAIRMAN _OWNERSHIP			-2.403	
			(0.134)	
PRESIDENT_AGE				1.904
				(0.380)
PRESIDENT _OWNERSHIP				-1.271
				(0.472)
Industry-adjusted sale	0.868	-0.077	-0.855	1.280
	(0.264)	(0.851)	(0.185)	(0.141)
Industry-adjusted ROA	0.776	0.199	1.169	1.172
	(0.427)	(0.831)	(0.289)	(0.352)
Industry-adjusted ROS	-0.387	-0.228	-0.109	-0.590
	(0.116)	(0.231)	(0.591)	(0.108)
Market excess return	1.800	0.059	-0.417	2.425
	(0.215)	(0.920)	(0.673)	(0.226)
Leverage	1.932	-2.500	-2.353	-0.868
	(0.556)	(0.263)	(0.361)	(0.796)
Tobin's Q	1.053	0.374	2.120	-1.433
	(0.542)	(0.798)	(0.2609)	(0.410)
LIBOR	-7.571**	-4.837*	-2.207	-7.566**
	(0.017)	(0.053)	(0.490)	(0.029)
Constant	-7.184	-11.344	-13.122	-8.146
	(0.981)	(0.971)	(0.952)	(0.979)
Observations	66	67	65	63
Year FE	YES	YES	YES	YES
Pseudo R-squared	0.624	0.494	0.472	0.630

Table VIII_*Continued*

Panel B. Industry adjustment by SIC 4 digit code				
Cboard	3.065*	2.416*	1.024	3.756*
	(0.056)	(0.051)	(0.473)	(0.057)
AVERAGE_AGE	-0.744			
	(0.718)			
AVERAGE_OWNERSHIP	-1.488			
	(0.327)			
CEO_AGE		3.347		
		(0.120)		
CEO_OWNERSHIP		-1.748		
		(0.142)		
CHAIRMAN_AGE			1.880	
			(0.320)	
CHAIRMAN _OWNERSHIP			-3.715**	
			(0.049)	
PRESIDENT_AGE				-0.074
				(0.974)
PRESIDENT _OWNERSHIP				-1.475
				(0.256)
Industry-adjusted sale	-0.011	-0.206	-1.071*	-0.014
	(0.981)	(0.614)	(0.070)	(0.976)
Industry-adjusted ROA	-3.196	-2.043	-0.578	-2.386
	(0.185)	(0.314)	(0.278)	(0.261)
Industry-adjusted ROS	0.238	-0.170	-0.312	-0.241
	(0.652)	(0.544)	(0.364)	(0.733)
Market excess return	0.788	-0.014	0.206	1.175
	(0.296)	(0.9896)	(0.883)	(0.200)
Leverage	-4.591	-5.289*	-6.033*	-4.378
	(0.238)	(0.088)	(0.082)	(0.185)
Tobin's Q	4.298*	2.168	3.623	1.884
	(0.100)	(0.300)	(0.103)	(0.377)
LIBOR	-12.993**	-8.182**	-12.950**	-11.289**
	(0.023)	(0.042)	(0.040)	(0.014)
Constant	-8.603	-11.493	-5.8501	-9.705
	(0.977)	(0.971)	(0.978)	(0.975)
Observations	66	67	65	63
Year FE	YES	YES	YES	YES
Pseudo R-squared	0.655	0.539	0.548	0.628

changed their management, and another subsample includes the failed MBOs that did not change their management. To compare the two subsamples, we match the subsamples that are in the same industry and have the most similar propensity scores. Here, we use the nearest neighbor matching method with replacement. The management-changed sample in Panel A indicates a change in at least one of the top three executives. In Panels B to D, we decompose the management into individual members: the CEO, chairman, and president.

Table IX shows that subsamples that change their management, including the CEO, chairman, and president, report consistently lower industry-adjusted ROAs in comparison to the other groups. The

Table IX. Median difference of firm characteristics

Table IX compares unsuccessful MBOs that change their management and ones that do not change their management. MUF is management-unchanged firms and MCF is management-changed firms. CUF and CCF are CEO/chairman-unchanged firms and CEO/chairman changed firms, respectively. PUF is president-unchanged firms and PCF is president-changed firms. ROA is the ratio of EBITDA to total assets and ROS is the ratio of EBITDA to sales. The industry-adjusted performance measures are the difference between the performance of sample firms and mean performance of all the firms which are in the same industry with the sample. Market excess return is the sample return deducting market return for the [-425, -61]. Leverage is the book value of debt to the market value of total assets. Tobin's Q is the ratio of a firm's total market value to its book value. We calculate the return of LIBOR, applying the same estimation period with the Market excess return. ***, **, and * indicate significance at the 1%, 5%, and 10% level respectively.

Panel A. Management-unchanged VS. Management-changed (Number of pairs: 20)				
Variables	MUF	MCF	Median value of differences	*p*-value
Industry-adjusted sale	-1.016	-0.875	0.141	0.870
Industry-adjusted ROS	1.508	1.566	0.058	0.452
Industry-adjusted ROA	0.717	0.385	-0.332***	0.007
Market excess return	-0.358	-0.173	0.186	0.784
Leverage	0.307	0.385	0.078	0.546
Tobin's Q	1.036	1.148	0.111	0.330
Panel B. CEO-unchanged VS. CEO-changed (Number of pairs: 18)				
Variables	CUF	CCF	Median value of differences	*p*-value
Industry-adjusted sale	-1.182	-0.948	0.234	0.966
Industry-adjusted ROS	1.291	1.515	0.224	0.442
Industry-adjusted ROA	0.604	0.385	-0.219**	0.018
Market excess return	-0.396	-0.146	0.250	0.417
Leverage	0.492	0.295	-0.198	0.212
Tobin's Q	0.844	1.064	0.220	0.551
Panel C. Chairman-unchanged VS. Chairman-changed (Number of pairs: 13)				
Variables	CUF	CCF	Median value of differences	*p*-value
Industry-adjusted sale	-1.182	-1.379	-0.197	0.191
Industry-adjusted ROS	0.331	0.592	0.262	0.839
Industry-adjusted ROA	0.604	0.232	-0.371*	0.094
Market excess return	-0.396	-0.173	0.224	0.946
Leverage	0.702	0.273	-0.429**	0.033
Tobin's Q	0.836	1.166	0.330	0.376
Panel D. President-unchanged VS. President-changed (Number of pairs: 19)				
Variables	PUF	PCF	Median value of differences	*p*-value
Industry-adjusted sale	-1.182	-0.833	0.349	0.541
Industry-adjusted ROS	1.508	1.604	0.096	0.490
Industry-adjusted ROA	0.717	0.452	-0.265***	0.005
Market excess return	-0.358	-0.173	0.186	0.798
Leverage	0.359	0.425	0.066	0.679
Tobin's Q	1.369	1.129	-0.240	0.210

negative change in ROA at the time of an MBO announcement can be a determinant of executive turnover if the firms failed the trades. Furthermore, this analysis suggests that our sample might exhibit sample selection bias unless we separate those two groups from the sample.

Table X. Abnormal returns depending on management turnover

In Table X, we measure cumulative average abnormal returns surrounding the announcement and cancellation day and between those dates. The full sample excludes the observations in which the replacement of management is not recognized, and it is also distinguished into two groups in which the management is replaced or not after MBO announcement. The number of observations is in square brackets and Observations must not have any missing day of return during the estimation period 255 days ending 46 days before the event date. ***, **, and * indicate significance at the 1%, 5%, and 10% level respectively.

Panel A. Cumulative average abnormal returns			
Group / Event time	Offer days -5 to 1 (%)	From offer +2 to cancellation -6 (%)	Cancellation days -5 to 1 (%)
Full sample	20.37*** (0.000) [70]	-1.09 (0.957) [69]	-7.71*** (0.000) [71]
Group: management was not replaced	16.50*** (0.000) [46]	1.15 (0.765) [45]	-5.27*** (0.000) [49]
Group: management was replaced	27.77*** (0.000) [24]	-5.29 (0.621) [24]	-13.15*** (0.000) [22]
Panel B. Cumulative average abnormal returns			
Group / Event time	Offer days -2 to 2 (%)	From offer +3 to cancellation -3 (%)	Cancellation days -2 to 2 (%)
Full sample	20.34*** (0.000) [70]	-2.26 (0.794) [69]	-7.51*** (0.000) [71]
Group: management was not replaced	17.18*** (0.000) [46]	-0.21 (0.891) [45]	-4.57*** (0.000) [49]
Group: management was replaced	26.39*** (0.000) [24]	-6.09 (0.532) [24]	-14.05*** (0.000) [22]
Panel C. Cumulative average abnormal returns			
Group / Event time	Offer days -1 to 1 (%)	From offer +2 to cancellation -2 (%)	Cancellation days -1 to 1 (%)
Full sample	20.54*** (0.000) [70]	-2.01 (0.861) [70]	-7.50*** (0.000) [71]
Group: management was not replaced	17.56*** (0.000) [46]	0.71 (0.749) [46]	-6.01*** (0.000) [49]
Group: management was replaced	26.26*** (0.000) [24]	-7.21 (0.467) [24]	-10.83*** (0.000) [22]

Based on the previous analysis, we can conclude that failed MBO firms that change their management have a lower accounting performance, making selection bias more likely. In Table X, we reexamine the stock performance of failed MBO deals depending on management turnover in order to remove

selection bias from our sample. In the first column of Panel A, the average CAR around the MBO announcement for the management-changed sample is 27.77 percent, and the CAR around the MBO cancellation is -13.15 percent. The characteristics of returns would not be different from those of the other group in which the management is not replaced. For the management-unchanged sample, the average CARs around the offer announcement and cancellation are 16.50 percent and -5.27 percent, respectively. However, the magnitude of the negative CAR around the cancellation for management-changed sample is greater than that observed for the management-unchanged sample. This finding indicates that the market reacts more negatively to management turnover in the unsuccessful MBO sample. The results presented in Panels B and C are consistent with those presented in Panel A. With respect to robustness, although we use the subsample in which management is not changed, there are negative returns on cancellation day. These results strongly buttress the organizational change hypothesis.

VI. Conclusion

This paper investigates whether the organizational change hypothesis or the private information hypothesis explains the cause of efficiency gains in recent MBOs, in contrast to previous studies that targeted MBO deals in the 1980s. Using the methodology of Ofek (1994), we sample 122 unsuccessful MBOs that occurred from 1995 to 2012 and find no increase in stock returns or accounting performance after the cancellation of the offer. In addition, after controlling for selection bias, the result does not change. This evidence supports the argument that the improved operating performance of successful MBOs cannot be attributed to management who has favorable information about future performance.

Thus, we find similarities between early and recent MBOs, which contribute to improvements in managerial efficiency. Although some changes in the PE industry and the macroeconomic environment occurred during the sample period, the involvement of management in buyout deals creates value for the company. Finally, this paper contributes to the existing literature by buttressing the organizational change hypothesis and using an extended sample period.

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